

Review of the International Commission on Trichinellosis Workshop on Surveillance for *Trichinella*

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Abstract

The International Commission on Trichinellosis (ICT) provides science-based advice on the subject of *Trichinella*. In May 2013, the ICT held a workshop with the goal of developing recommendations on surveillance for *Trichinella* that could contribute to classifying the public health risk of pork from defined compartments or regions. This workshop was initiated based on discussions at the national and international levels regarding best practices for assuring pork safety relative to *Trichinella*.

A proposed revision of the OIE Terrestrial Animal Health Code Chapter on *Trichinella* provides guidance for establishing negligible risk for *Trichinella* in compartments that are audited for specific controlled management practices. In November 2012, the Codex Alimentarius Committee on Food Hygiene requested that OIE consider an alternative approach for defining negligible risk, allowing surveillance to be used for verification in place of individual farm auditing. Some European Union countries have already been approved for derogation from individual carcass testing based on documenting a low level of risk through animal testing. These derogations are based on testing performed on pigs raised under controlled management conditions.

With the high quality of pig management in industrialized pork production systems, the availability of historical and contemporary testing data, and public health records demonstrating the rare occurrence of trichinellosis in many countries, population-based surveillance programs might be a viable alternative to individual farm audits for verifying negligible risk status.

Given the disparate nature of the various national and international standards for *Trichinella* control, and the lack of specific science-based guidance to document negligible risk through testing and other surveillance data, the recommendations provided by the ICT should form the basis for future decisions on establishing risk categories for pork relative to *Trichinella*.

Workshop Report

A total of 15 participants attended the workshop. Nine participants were elected members of the International Commission on Trichinellosis, including the current and immediate-past presidents. Other participants were selected based on their knowledge of the global pork industry, epidemiology of animal diseases, diagnostic methods, statistical sampling protocols to document prevalence, and analysis of risk for transmission of foodborne disease. The workshop attendees:

Lis Alban, Danish Bacon and Meat Council (Denmark)

Rafael Blasco (OECD-CRP representative)

Alvin Gajadhar, Canadian Food Inspection Agency (Canada) (co-organizer)

Ray Gamble, National Academy of Sciences (USA) (co-organizer)

Ian Gardner, University of Prince Edward Island (Canada)

Joke van der Giessen, National Institute of Public Health and the Environment (Netherlands)

Steve Hathaway, Ministry of Agriculture and Forestry (New Zealand)

Dolores Hill, U.S. Department of Agriculture (USA)

Gillian Mylrea, World Animal Health Organization (OIE)

Karsten Noeckler, Federal Institute for Risk Assessment (Germany)

Sarah Parker, Canadian Food Inspection Agency (Canada)

Edoardo Pozio, Istituto Superiore di Sanita (Italy)

David Pyburn, U.S. Department of Agriculture (USA)

Pascal Boireau, Agency for Food, Environmental and Occupational Health Safety (France)

Isabelle Vallee, Agency for Food, Environmental and Occupational Health Safety (France)

There were three objectives for this workshop: 1) to develop recommendations on the appropriate level of testing to assure safety of pork (relative to *Trichinella*) and to allow derogation from slaughter testing or further processing; 2) to develop recommendations for appropriate application of testing methods to meet objective 1; and 3) to define gaps in scientific knowledge that affect the best use of current surveillance tools. These objectives were designed to result in a series of recommendations which could be used by the World Organization for Animal Health and the FAO Codex Alimentarius Commission in developing international requirements for food safety and trade. These recommendations will assist in the revision and supplementation of comprehensive science based guidance from the International Commission on Trichinellosis, which is the definitive body on the subject of *Trichinella* and trichinellosis.

The format of the workshop was divided into sections in which presentations from various subject matter experts would provide appropriate background knowledge such that consensus recommendations could be reached. Specific points addressed in the presentations included:

- How to define the composition/characteristics of a population to be surveilled/tested?
- How should testing/surveillance be structured (risk-based) and how might this vary by country/region?
- What are the appropriate tests to be used (minimum performance characteristics)?
- What statistical sampling protocols could be used to achieve acceptable levels of risk?

Given the importance of the outcome relative to guidance in food safety and trade, substantial time was allowed for discussion and planning of how to proceed with formulation of final recommendations.

Following an initial review of the objectives of the workshop, presentations were made on the following subjects:

- Overview of roles and responsibilities and current regulations/guidelines, and future directions for protection of public health relative to *Trichinella* in pork.
- Current and proposed standards of the World Organization for Animal Health (OIE) for mitigating risk of *Trichinella* infection in pork production systems.
- Current and proposed requirements of the Codex Alimentarius for mitigating public health risk of trichinellosis.
- Epidemiology of *Trichinella* in controlled and non-controlled management systems
- Structure of pork production and marketing systems in developing countries as it pertains to new OIE and Codex regulations.
- Structure of pork production systems in industrialized countries; status and risk of trichinellosis.
- Defining populations of pigs that can be subjected to surveillance – animal ID, auditing, etc.
- Surveillance tools for establishing prevalence data.
- Performance characteristics of the artificial digestion test and practical applications.
- Performance characteristics of the ELISA including new data on ELISA performance (ICT collaborative studies).
- Design elements for structuring risk-based surveillance.
- Statistical sampling protocols for achieving acceptable levels of risk.

Discussion occurred during and after each presentation. Following the conclusion of all presentations, workshop participants discussed how to define acceptable levels of risk for controlled management systems and began to develop specific recommendations for surveillance program design and applications. The group also identified gaps in knowledge regarding testing systems that should be addressed.

This workshop resulted in a consensus on several key principles for new recommendations on methods for verifying the integrity of a compartment of negligible risk for *Trichinella* in swine. The workshop affirmed that swine that are not included in a negligible risk compartment as defined in the new OIE Animal Health Code Chapter on *Trichinella* should follow current ICT guidelines on control. The workshop developed the following general definitions:

Negligible risk herd – Swine that are managed under conditions of biosecurity (as defined by the ICT in other recommendations) that minimize exposure to *Trichinella*. Recognition of negligible risk for a herd is dependent on all animals being raised under these principles.

Negligible risk compartment – A compartment consisting of negligible risk herds in a management system.

Importantly, the group concluded that the status of a negligible risk compartment may be verified through an assurance program for maintenance of conditions of biosecurity. Assurance may include, but not be limited to, a program of regular audits and/or swine testing/surveillance data. It was also concluded that, where auditing is used to assure maintenance of conditions of biosecurity, there is adequate scientific justification that testing is not required within the negligible risk compartment, once established. When surveillance is used to assure maintenance of conditions of biosecurity, the design prevalence for swine testing should be determined based on the intended purpose and swine testing should be performed using suitably standardized and validated digestion or serological methods.

Specific points where we identified gaps in scientific knowledge included the following: specific and detailed knowledge of the performance characteristics of digestion and ELISA tests; clarification of processes necessary to consider an audit valid; requirements for audit frequency; and, definition of competency standards for the auditors.

This workshop addressed the assessment of best practices in the establishment and maintenance of compartments, regions, and countries where the achievement of a negligible health risk of trichinellosis can be documented. By providing guidance on implementation of scientifically defensible surveillance systems, the outcomes of this workshop will inform and guide national and international regulatory authorities (OIE/Codex), which in turn will result in 1) a reduction in the cost of assuring pork safety, 2) alleviating complex barriers in international trade, and 3) assure the consumer of a *Trichinella*-free food chain.